

WHAT IS CLAIMED IS:

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C1 >
- ① A method of altering an amount of an unsaturated fatty acid in a seed of a plant comprising: decreasing a fatty acid desaturase activity in the seed by genetic manipulation of at least one of fatty acid desaturase or fatty acid hydroxylase.
 2. The method of Claim 1, wherein an endogenous gene for said fatty acid hydroxylase is mutated and thereby decreases fatty acid hydroxylase activity in the seed.
 3. The method of Claim 1, wherein said plant is transformed with a nucleic acid containing a sequence which encodes a fatty acid hydroxylase or derivative thereof.
 4. The method of Claim 3, wherein said derivative is a dominant negative mutant which thereby alters the amount of the unsaturated fatty acid in the seed.
 5. The method of Claim 3, wherein said derivative is a mutant fatty acid hydroxylase in which one or more essential histidine residues have been mutated which thereby alters the amount of the unsaturated fatty acid in the seed.
 6. The method of Claim 1, wherein an endogenous gene for said fatty acid desaturase is mutated and thereby decreases fatty acid desaturase activity in the seed.

Sub
C2 >

(7) The method of Claim 1, wherein said plant is transformed with a nucleic acid containing a sequence which encodes a fatty acid desaturase or derivative thereof.

(8) The method of Claim 7, wherein said derivative is a dominant negative mutant which thereby alters the amount of the unsaturated fatty acid in the seed.

(9) The method of Claim 7, wherein said derivative is a mutant fatty acid desaturase in which one or more essential histidine residues have been mutated which thereby alters the amount of the unsaturated fatty acid in the seed.

(10) The method of Claim 1, wherein said plant is selected from the group consisting of rapeseed, Crambe, Brassica juncea, canola, flax, sunflower, safflower, cotton, cuphea, soybean, peanut, coconut, oil palm and corn.

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C3 >

(11) A method of altering an amount of a unsaturated fatty acid comprising:

(a) transforming a plant cell with a nucleic acid containing a sequence which encodes a fatty acid hydroxylase or a dominant negative mutant of fatty acid hydroxylase or a dominant negative mutant of fatty acid desaturase,

(b) growing a seed-bearing plant from the transformed plant cell of step (a), and

(c) identifying a seed from the plant of step (b) with the altered amount of the unsaturated fatty acid in the seed.

12. The method of Claim 11, wherein said nucleic acid contains a sequence which encodes the dominant negative mutant of fatty acid hydroxylase in which one or more essential histidine residues have been mutated.

13. The method of Claim 11, wherein said nucleic acid contains a sequence which encodes the dominant negative mutant of fatty acid hydroxylase which thereby alters the amount of the unsaturated fatty acid in the seed.

14. The method of Claim 11, wherein said nucleic acid contains a sequence which encodes the dominant negative mutant of fatty acid desaturase in which one or more essential histidine residues have been mutated.

15. The method of Claim 11, wherein said nucleic acid contains a sequence which encodes the dominant negative mutant of fatty acid desaturase which thereby alters the amount of the unsaturated fatty acid in the seed.

16. The method of Claim 11, wherein said plant is selected from the group consisting of rapeseed, Crambe, Brassica juncea, canola, flax, sunflower, safflower, cotton, cuphea, soybean, peanut, coconut, oil palm and corn.

17. A recombinant nucleic acid suitable for use in Claim 1, wherein said nucleic acid contains a sequence encoding a fatty acid hydroxylase with an

amino acid identity of 60% or greater to SEQ ID NO:4.

18. The recombinant nucleic acid of Claim 17, wherein the amino acid identity is 90% or greater to SEQ ID NO:4.

19. The recombinant nucleic acid of Claim 17, wherein the amino acid identity is 100% of SEQ ID NO:4.

20. The recombinant nucleic acid of Claim 17, wherein said nucleic acid contains a sequence having a nucleotide identity of 90% or greater to SEQ ID NO:1, 2 or 3.

21. The recombinant nucleic acid of Claim 17, wherein said nucleic acid contains SEQ ID NO:1, 2 or 3.

22. The recombinant nucleic acid of Claim 17, wherein said sequence is obtainable from a plant species producing a hydroxylated fatty acid.

23. A recombinant nucleic acid suitable for use in Claim 1, wherein said nucleic acid contains a sequence encoding at least one of fatty acid desaturase or fatty acid hydroxylase.

24. The recombinant nucleic acid of Claim 23, wherein said sequence is obtainable from *Ricinus communis* (L.) (castor).

25. The recombinant nucleic acid of Claim 23, wherein said sequence is obtainable from *Lesquerella fendleri*.

26. The recombinant nucleic acid of Claim 23, wherein said nucleic acid contains a sequence encoding at least one of fatty acid desaturase or fatty acid hydroxylase in which one or more essential histidine residues have been mutated.

27. The method of Claim 1 further comprising: processing the seed containing the altered amount of the unsaturated fatty acid to obtain oil and/or seed meal.

28. Oil obtained by the method of Claim 27.

29. Seed meal obtained by the method of Claim 27.

30. Plant obtained by the method of Claim 1.

31. The method of Claim 11 further comprising: processing the seed containing the altered amount of the unsaturated fatty acid to obtain oil and/or seed meal.

32. Oil obtained by the method of Claim 31.

33. Seed meal obtained by the method of Claim 31.

34. Plant obtained by the method of Claim 11.

2001/01/11